C L A I M S :

1. Amorphous microporous membranes having pore sizes of from 0.5 to 2 nm with a layer thickness of below 10 µm and a half-width of < 0.3 nm and containing in their pores at least one catalytically active component for heterogeneously catalyzed reactions, wherein two or more mutually reacting starting materials are simultaneously pressed in one direction through the catalytic membrane.

2. The membrane catalysts according to claim 1, characterized in that said pore size is not larger than twice the diameter of the molecules of said starting materials, especially from 0.6 to 3 nm, with a thickness of the amorphous layer of from 0.1 to 10 µm, preferably < 2 µm, wherein two or more reactants are passed through the membrane, which involves the avoiding of back mixing.